

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 1, 3-4, 7-25, 29, and 31-34 are currently pending in this application. No new matter has been added by way of the present amendment. For instance, the amendments to claims 1, 13, 14, 29 and 33 find support at, for example, par. [0056] of the published application. Accordingly, no new matter has been added.

At the outset, the present application is believed to be in condition for allowance. Entry of this amendment is requested under 37 C.F.R. §1.116, as the amendment raises no new issues which would require further search and/or consideration by the Examiner. Alternatively, Applicant requests entry of the amendment in order to place the claims in better form for consideration on Appeal.

In view of the amendments and remarks herein, Applicants respectfully request that the Examiner withdraw all outstanding rejections and allow the currently pending claims.

Issues Under 35 U.S.C. § 102(b)

Claim 14 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Bernier et al. (U.S. 5,834,571) (hereinafter "Bernier"). Applicants respectfully traverse.

The Examiner asserts that Bernier discloses a method of producing a polymer in a continuously operated gas phase reactor, polymerizing at least one monomer in a bed containing an active catalyst and adjusting a discharge rate to withdraw a polymer product from the reactor.

The Examiner further asserts that Bernier inherently teaches (1) adjusting a discharge rate of the polymer powder so as to maintain a constant bed level during polymerization; (2)

separately recovering particle agglomerates from the reactor; and (3) providing a control valve that is adjusted to provide for pulsating operation. Moreover, the Examiner argues that “applicants must recognize that Bernier et al. (figure, [item] 44 (valve 48)) disclose[s] the first outlet nozzle where the polymers are continuously withdrawn. Regarding the claimed “second outlet nozzle”, Bernier et al. (figure, item 50) clearly disclose a second outlet nozzle for separately recovering particle agglomerates from the reactor” (emphasis in original).

Applicants respectfully disagree and submit that the Examiner has failed to establish a *prima facie* case of anticipation. For anticipation under 35 U.S.C. §102, the reference must teach each and every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).

Applicants submit that the Examiner appears to misunderstand the differences between continuous and intermittent withdrawal. During continuous withdrawal there is a **continuous, uninterrupted, flow of polymer out of a reactor** (see, e.g., US 2004/0213706, paragraphs [0024] and [0026]) (emphasis added). If the flow of polymer out of the reactor is interrupted, then the withdrawal is no longer continuous, but is rather intermittent.

In the present invention, a polymer is withdrawn from a reactor so that there is an **uninterrupted flow of polymer out of the reactor during the whole operation of the reactor** (emphasis added). When the continuous withdrawal of polymer is combined with an intermittent removal of agglomerates, the reactor **necessarily** needs to have another outlet operating

intermittently (intermittent operation is described in paragraph [0008] of US 2004/0213706, as well as col. 19, lines 41 to 60 of Bernier).

The Examiner maintains his previous position that the withdrawal process in Bernier can be adjusted to run “continuously and intermittently” (see page 4, third paragraph of Office Action). Applicants strongly disagree.

The withdrawal process of Bernier can be adjusted to run **either** continuously or intermittently, **but it cannot operate both continuously and intermittently at the same time** (emphasis added). Bernier only refers to continuous withdrawal at col. 4, lines 16-17, disclosing that the polymer can be withdrawn continuously or intermittently. Figure 1 of Bernier shows that the reactor has one outlet only. Because continuous and intermittent operation are **mutually exclusive** (i.e., if the outlet operates intermittently, the flow of polymer via the outlet is interrupted at some point of time and then the withdrawal is not continuous anymore) the withdrawal of Bernier cannot operate both continuously and intermittently.

The Examiner further argues that, when the process of Bernier is run intermittently, it would inherently possess a pulsating operation of the valve. However, Applicants submit that when the process of Bernier is operated intermittently, it does not withdraw the polymer continuously. As such, the process of Bernier does not anticipate the presently claimed process.

With regard to the “pulsating operation” of the outlet valve, Applicants note that this refers to continuous withdrawal and not intermittent withdrawal. As explained in the last two sentences of paragraph [0055] of US 2004/0213706, the pulsating operation consists of maintaining the control valve in its normal position, then opening it fully open for a short time and then returning it into the normal position. As the withdrawal is continuous, the valve is

always open and there is a continuous flow of polymer out of the reactor. When the valve is fully opened, the flow rate increases suddenly for a short period after which it returns to normal when the normal valve position is restored. This is clearly different from the intermittent operation of Bernier (where the flow of polymer is stopped for a certain period of time).

The Examiner further argues that valve 50 would qualify as the second outlet nozzle from the reactor (see pages 4 and 5 of the Office Action). However, Applicants note that the Examiner's assertion is incorrect. The outlet nozzle connected to valve 50 is not connected to the reactor, but is rather connected to the product removal vessel.

Bernier explicitly discloses that there is only one outlet nozzle 44 coming out from the reactor 10 (see col. 19, line 26 of Bernier). The outlet nozzle 50 is connected to the product discharge tank 46 (col. 19, line 30) and thus cannot be used to withdraw agglomerates from the reactor (10). The outlet nozzle 50 can also not be used to withdraw agglomerates from the product discharge tank 46 because (i) it is positioned at the top of the tank, and the agglomerates would not move upwards in the discharge tank 46, and (ii) Bernier clearly discloses that said nozzle is used to release fluid (=gas) to the surge tank 62 (see col. 19, lines 36-37).

At page 6 of the Office Action, the Examiner argues that the claims as written do not require the valves to be always open. Applicants strongly disagree. All the independent claims of the pending patent application require that polymer is continuously withdrawn from the reactor. This requires either that (i) there is an outlet containing a control valve which is always open (as otherwise there would not be a continuous flow of polymer out of the reactor (the polymer cannot flow through a closed valve), and if at any time the flow of polymer is interrupted, then the withdrawal is not continuous) or (ii) there is an outlet with an open connection without any

kind of valve. Thus, continuous withdrawal implicitly requires there to be an open connection from the reactor during the whole operation of the reactor.

Clearly, Bernier '571 fails to explicitly or implicitly teach each and every aspect of the claimed invention, and thus fails to anticipate the same.

Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Issues Under 35 U.S.C. § 103(a)

Claims 1, 3, 4, 7-25, 29, 31-32 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bernier. Additionally, claim 33 stands rejected as obvious over Bernier '571 in view of Koves (U.S. 4,959,198) (hereinafter Koves '198). Applicants respectfully traverse.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). "[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ 2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements;

instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

As previously discussed, Bernier ‘571 fails to teach a method of producing a polymer in a continuously operated gas phase reactor, comprising the steps of polymerizing at least one monomer in a bed containing an active catalyst, continuously withdrawing polymer powder from the reactor through a first outlet nozzle, adjusting a discharge rate of the polymer powder so as to maintain a constant bed level during polymerization and separately recovering particle agglomerates from the reactor by discontinuously withdrawing the particle agglomerates, wherein the ratio between the polymer powder continuously discharged from the reactor and the polymer particle agglomerates discontinuously withdrawn is in the range of 1:1 to 10,000:1.

At page 13, third paragraph, the Examiner argues that “Bernier disclose the first outlet nozzle” and the “second outlet nozzle for separately recovering particle agglomerates from the reactor.” Applicants respectfully disagree.

As noted above, Bernier does not in any way teach or suggest withdrawing a polymer continuously via nozzle 44, but rather teaches that this is done intermittently. Moreover, assuming *arguendo* that Bernier disclosed continuous polymer withdrawal (a point which Applicants do not concede), the “second outlet nozzle 50” does not separately withdraw agglomerates from the reactor 10, but from the discharge tank 46. If the equipment according to Figure 1 of Bernier were used for continuous withdrawal, then the agglomerates would be continuously withdrawn from the reactor 10 together with the polymer powder via nozzle 44 and not separately and discontinuously.

The Examiner further argues that it would be obvious to install a screen in the outlet nozzle 44 of Bernier to prevent agglomerates from entering the nozzle. This is the purpose of the screen, as explained by US 2004/0213706, paragraph [0055]. However, the Examiner also argues that the agglomerates could be removed via valve 50.

Applicants respectfully submit that it would be impossible to remove agglomerates via valve 50 if the screen would prevent the agglomerates from passing through the outlet nozzle 44. The agglomerates would remain in the reactor 10, and there would be no way to remove them. It is thus evident that Bernier does not teach or suggest a step of “separately recovering particle agglomerates” as presently claimed.

Evidently, the cited references fail to teach or suggest a method as claimed. For this reason alone, this rejection is improper and should be withdrawn.

Moreover, Applicants submit that there is no rational underpinning to support the legal conclusion of obviousness, since one skilled in the art would not have been motivated to modify the references as proposed. Applicants respectfully submit that the Examiner is improperly “picking and choosing”, and combining features from different, **unrelated**, embodiments of Bernier in attempts to establish the obviousness of the present rejection (for instance, the Examiner takes features which are clearly directed to the embodiment of Bernier directed to intermittent withdrawal and uses them directly in an embodiment which is directed to continuous withdrawal).

In view of the above, reconsideration and withdrawal of this rejection are respectfully requested.

Miscellaneous

Applicants enclose herewith a copy of a Decision on Opposition, issued by the European Patent Office in connection with the corresponding European patent, maintaining the corresponding European patent as originally granted by the European Patent Office.

The opponent relied on Bernier (D3) as the closest prior art document. However, the European Patent Office rejected the opposition.

Conclusion


All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and objections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Vanessa Perez-Ramos, Reg. No. 61,158, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: **DEC 30 2009**

Respectfully submitted,

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Enclosure: Copy of Decision on Opposition issued in connection with European Patent Application 99 972 228.3



Datum
Date 01.03.2006
Date

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Sheet 1
Feuille

Anmelde-Nr.:
Application No.: 99 972 228.3
Demande n°:

Decision of Opposition
Div

I. Summary of Facts and Submissions

1. The European patent application No. 99 972 228.3 claiming priority FI 982456 of 12 November, 1998 was filed on 12 November, 1999 by Borealis Technology Oy, Porvoo (FI) (Proprietors). The mention of the grant of the European patent thereon was published on 28 April, 2004 under no. 1 159 305 in the Bulletin 2004/18.
2. An oppositions against the above patent was filed on 28 January, 2005 by BP Chemicals LTD, Sunbury-on-Thames (GB), which is now Innovene Europe LTD, Staines (GB) (Opponents). The revocation of the patent as a whole under Art. 102 (1) EPC was requested on grounds of lack of novelty and lack of inventive step (Art. 100 (a) EPC) as well as on grounds of insufficient disclosure (Art. 100 (b) EPC). The Opponents relied on the following prior art publications:
 - D1: EP-A-0 830 892
 - D2: EP-B-0 381 364
 - D3: US-A-5 834 571
 - D4: JP-A-03 229 633
 - D5: Powder and Bulk Engineering, 1987, H. Feldmann
 - D5': Powder and Bulk Engineering, 1997, G. Stolhanske
 - D6: US-A-5 939 027
 - D7: US-A-4 535 134
 - D8: WO 97/04015
 - D9: EP-A-0 870 539

Only those documents are referred to in Section II. which were discussed by the parties and which are considered to be relevant to this Decision.
3. The Proprietors filed a counterstatement with the letter of 04 July, 2005 including an Auxiliary Request with a new set of claims 1-28. It was requested that the opposition be rejected or, in the alternative, be maintained in amended form on the basis of the claims of the Auxiliary Request.
4. The Opposition Division identified the issues to be discussed during the hearing in the annex to the summons to attend Oral proceedings dated 03 November, 2005.
5. Oral Proceedings were held on 20 February, 2006 (see minutes).



II. Reasons for the Decision

1. The opposition is admissible because it meets all the requirements of Articles 99 (1) and 100 EPC and of Rules 1 (1) and 55 EPC.
The issue of a decision is permissible since the parties have had an opportunity to comment on the grounds upon which the decision is based (Article 113 EPC).
2. **Sufficiency of the disclosure (Articles 100 b) and 83 EPC)**

Although, the Opponents withdrew their corresponding objection at the beginning of the Oral Proceedings, the following is stated:

The concerns expressed by the Opponents are considered to relate to a clarity problem, which is not a ground for opposition, rather than to the alleged lack of sufficient disclosure.

The Opponents argued that the skilled person would not have sufficient clear information so as to rework the claimed process. In particular, it was emphasised that there would be no clear information showing how to perform the "separate recovery of agglomerates" via the upper/lower withdrawal pipes shown in Fig. 1. The Opposition Division is of the opinion that the specification of the opposed patent in combination with the general knowledge of the expert (see eg T 206/83 or T 32/85) provides sufficient information so that the invention can be reworked over the whole range claimed.

Both embodiments, namely the withdrawal of particle agglomerates directly from the reaction vessel via a separate outlet or the withdrawal of agglomerates from the continuous flow of the polymer powder are explained in detail, and are schematically shown in the Figures 1+2.

In case that a separate outlet is used, this is located in a lower position than the outlet functioning as a continuous discharge system, whereas a screen is used for separating the agglomerates from the continuous flow of the polymer powder (see Fig. 2). The Opposition Division is further convinced that the skilled person knows from his general common knowledge how to select necessary, suitable means (eg a grid having appropriate dimensions) for putting into practice these embodiments.



3. Novelty (Articles 100 (a), 52 (1) and 54 (2) EPC)

The independent claim 1 defines a process comprising the following essential features (F) which may be summarized as follows:

- F1: a method of producing a polymer in a continuously operated gas phase reactor comprising the steps:
- F2: polymerising at least one monomer in a bed containing active catalyst formed by catalyst and polymer particles suspended in a fluid, said bed defining a fluidized bed level in said reactor,
- F3: continuously withdrawing polymer powder from the reactor,
- F4: adjusting the discharge rate of the polymer powder so as to maintain a constant bed level during polymerisation, and
- F5: withdrawing and separately recovering particle agglomerates from the reactor.

The language of feature **F5** is to be analysed carefully so as to avoid any ambiguity and/or misunderstanding of the true scope of this feature. The Opposition Division considers that **F5** includes two basic aspects, the first being that the particle agglomerates are withdrawn (at any position, and according to one embodiment illustrated in Fig. 1; together with the polymer particles as shown in Fig. 2) from the reactor, and the second being that the particle agglomerates are separately recovered, ie that said "withdrawal and recovery" may be a true post-polymerisation process step as emphasized by the Opponents.

A corresponding method of discharging polymer from a continuously operated gas phase reactor comprising slightly modified (different wording) features F3 to F5 is defined in claim 14. A corresponding apparatus is specified in claim 26. Hence, the conclusion reached for claim 1 is considered to apply to claims 14, and 26 in the same way.

The Opponents stated that the entirety of the above features would be disclosed directly and/or inherently in **D3**, ie there was implicit agreement that the entirety of process features F1 to F5 cannot be taken from D1, or D2, as it can be seen from the Proprietors' correct analysis given in writing.

After a long dispute about the meaning of feature F5, and the corresponding disclosure of D3, the Opponents finally agreed that there is no explicit disclosure of a "separate recovery" of particle agglomerates in this document.



The Opponents concluded that the process of D3 includes a continuous withdrawal of polymer product (see eg col. 4 lines 15/16) and that there would be inherent disclosure of a "separate recovery of agglomerates".

Since, the Opponents could not provide suitable evidence for the latter allegation, the Opposition Division came to the conclusion that the second aspect of F5 is not disclosed directly and unambiguously in D3, and that there is no document on file teaching the entirety of process features F1 to F5.

Hence, the novelty of the challenged process, and the corresponding apparatus was acknowledged.

4. Inventive step (Articles 100 (a), 52 (1) and 56 EPC)

The objective technical problem underlying the contested patent may be formulated as the provision of a continuously operated gas-phase polymerisation having an effective and high throughput, and also having a low-cost discharge system allowing a polymer take-out without any disturbance of the polymerisation, thereby insuring that the downstream equipment is not adversely affected. In addition, the process should be "flexible" in that it allows simple increase of its capacity (cf. paragraphs [0008]-[0011], and [0019]-[0021]).

Having regard to the Example according to the invention (see paragraphs [0057] to [0059]) and the Comparative Example (see the conventional, batchwise product outtake system described in paragraphs [0053] to [0056]), the Opposition Division is satisfied that the above problem has been solved successfully.

The truly continuous process of the invention shows increased capacity, and at the same time reduced oscillation of the bed level being an additional advantage of the present invention.

The Opponents offered two approaches which were deemed to show the alleged lack of an inventive step:

The Opponents were of the opinion that the closest prior art D1 taken in conjunction with the teaching of D2 would render obvious the present process.

Although, D1 shows the gas-phase polymerisation of olefins including a specific product discharge system (see Fig. 1), it does not disclose a truly continuous process. The passages identified by the Opponents (page 3 col. 3 lines 51/52,



and page 8 col. 13 lines 1-3) do not show a process for the continuous polymerisation including a continuous polymer take out (see also page 4 col. 5 lines 27-41, and Fig. 7). There is also no disclosure of a **separate recovery of particle agglomerates**. Finally, D1 is concerned with a different object which does not take into account the problems associated with the presence of agglomerates in a continuous process. As indicated on page 3 col. 3 lines 2-11, the inventors of D1 sought for an improved discharge system allowing a simplified an efficient way of withdrawing the product from a fluidized-bed reactor, while reducing the proportion of the reaction gas mixture withdrawn from the polymer, and avoiding blocking of the discharge system.

For these reasons, the Opposition Division does not recognize any clear information in D1 which would prompt the skilled person to carry out the necessary modifications so as to arrive at something falling within the terms of claim 1 with a reasonable expectation of success having regard to the desirable improvements achievable therewith.

Similar considerations apply to the teaching of D2. This patent does not disclose or fairly suggest a truly **continuous** process (see eg page 3 col. 3 lines 51/52, page 4 col. 6 lines 35/36, page 5 col. 7 lines 28-30, and page 5 col. 8 lines 41-51) nor does it suggest a **separate recovery of polymer agglomerates** (see page 2 col. 2 line 32 et seq. and page 4 col. 6 lines 35-53). Like D1, D2 has a different object which is the minimisation of the quantity of fine particles which might cause blocking of the dust separator, and as a consequence, an enhancement of the reaction velocity leading to an increase of production efficiency (see col. 2 lines 45 et seq.). In contrast, the challenged invention aims at an improved recovery of agglomerates within a continuous process, irrespective of the probability whether, and in which amount, or when the undesirable form of product may be formed. Taking into account the different objects identified in D1, and D2 in comparison to the contested patent, the skilled person would not have consulted these prior art documents, and even if he would have done so, the entirety of features F1-F5 are not disclosed in or derivable from the combined full contents of D1+D2.

The Opponents were also of the opinion that feature F5 would represent a commonly known post-polymerisation process feature, and that this "common knowledge" in combination with the teaching of D3 would show that the present process would not involve an inventive step.



Whilst it may be true that a separate recovery of polymer agglomerates may be well known to those skilled the art, and which could (see could/would approach) have been taken into consideration, the Opponents have not submitted any evidence for this contention.

It is emphasized that there is no prior art showing that feature F5 in combination with F1 to F4 would provide a solution to the problems identified in the patent in suit. Therefore, this second approach must fail as well.

In summary, the cited prior art does not show a lack of an inventive step.

5. Conclusion

The Opposition Division is of the opinion that the grounds for opposition mentioned in Art. 100 EPC do not prejudice the maintenance of patent unamended. Thus, it is decided to reject the opposition under Art. 102 (2) EPC.



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Application No. / Patent No. 99 972 228.3 - 2109 / 1159305 / 01	Ref. OP001	Date 01.03.2006
Proprietor Borealis Technology Oy		

Decision rejecting the opposition (Article 102(2) EPC)

The Opposition Division - at the oral proceedings dated 20.02.2006 - has decided:

The opposition(s) against the European patent EP-B- 1159305 is/are rejected.
The reasons for the decision are enclosed.

Possibility of appeal

This decision is open to appeal. Attention is drawn to the attached text of Articles 106 to 108 EPC.

Opposition Division:

Chairman: Boletti, C
2nd Examiner: Hollender, C
1st Examiner: Lux, R



Horn, D
Formalities Officer
Tel. No.: +49 89 2399-8094

Enclosure(s): 6 page(s) reasons for the decision (Form 2916)
Wording of Articles 106 - 108 (Form 2019)
Minutes of oral proceedings

to EPO postal service: 24.02.06

After deliberation of the opposition division,

- the chairman announced the following decision:

"The opposition is rejected."

Regarding the reasons for the decision, the chairman referred to:

Article 102(2) EPC: the grounds for opposition mentioned in Article 100 EPC do not prejudice the maintenance of the patent as granted.

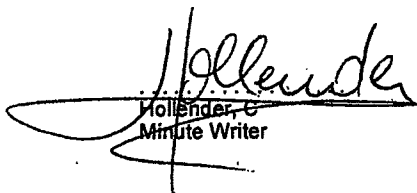
The claimed subject-matter meets the requirements of the EPC.

The chairman closed the oral proceedings on 20.02.2006 at 11h45 hours.



Boletti, C
Chairman

Annex(es):



Hollender, C
Minute Writer

Application No.:

99 972 228.3

Patent No.:

EP-B-1159305

Minutes of the oral proceedings before the OPPOSITION DIVISION

The proceedings were public.

Proceedings opened on 20.02.2006 **at** 9h00 **hours**

Present as members of the opposition division:

Chairman:	Boletti, C
1st member:	Lux, R
2nd member:	Hollender, C
Minute writer:	Hollender, C

Present as or for the party or parties:

- For the Proprietor(s): Borealis Technology Oy
Dr. U. Kador
M. Reinhard
H. Salminen as technical expert
- For the Opponent 1: BP International Limited
D. G. Hawkins

The identity of the person/s (as well as, if applicable, that of the witness or witnesses) and, where necessary, the authorisation to represent/authority to act were checked.

Essentials of the discussion and possible relevant statements of the parties: